

REMARKS/ARGUMENTS

Applicant responds herein to the Office Action dated November 16, 2004.

Claims 5-7 and 12-14 have been formally allowed.

On the other hand, claims 1-2 and 8-9 stand rejected on grounds of obviousness over Imahashi (5,414,244), in view of Sheets (4,698,486). Claims 3-4 and 10-11 stand rejected on grounds of obviousness over the aforementioned references, in further view of Shinriki (6,143,081). Reconsideration is requested of the rejections of the aforementioned claims, in view of the amendments to the claims herein and the following remarks. The remarks which follow will also be applicable to newly introduced claims 15 and 16.

The invention defined in claim 1, as amended, is characterized in that "said lamp house is disposed such that a direction of substrate loading and unloading by said transport robot is substantially perpendicular to said longitudinal direction". Also, the plurality of flashlamps are arranged in parallel and in a substantially horizontal direction that is substantially perpendicular to said longitudinal direction.

Similarly in claim 8, "said lamp house is disposed such that a direction of substrate loading and unloading by said transport robot is substantially perpendicular to said longitudinal direction of said lamp house".

The significance of the aforementioned claim features can be appreciated from the description at page 10, lines 3-25 of the specification, wherein it is explained that each of the bar-like flashlamps does not emit light at its distal ends, but rather has effective output characteristics only at its central region. Therefore, in order to uniformly irradiate the inside of the chamber, the flashlamps must each be longer than the outside dimension of the chamber. Setting the length of the flashlamps at the same level as the outside dimension of the chamber, or shorter, could extremely reduce the length of the portion which provides effective output characteristics, which may result in non-uniform light distribution on the substrate.

When the length of the flashlamps is greater than the outside dimension of the chamber, locating the lamphouse such that the loading and unloading directions of the substrate carried by a transport robot is perpendicular to the longitudinal direction of the flashlamps,

enables minimizing the distance necessary for transferring substrates from and to the chamber. The net benefit is that the transport robot and the whole apparatus can be made much more compact, as described at page 11, lines 1-10, and at page 17, line 10 to page 18, line 18 of the instant specification. The aforementioned benefit enables, moreover, the entire apparatus to be manufactured more compactly, as well as affording greater utility of a clean room and all the while, providing uniform irradiation inside the chamber.

Respectfully, the primary Imahashi and Sheets references do not disclose or render obvious the inventions summarized above. Thus, in contrast to the instant claims, Imahashi discloses a heating unit 13 including a plurality of lamps 13A (Fig. 1). Imahashi does not explicitly describe the specific shape of the lamps 13A. It cannot be discounted that the lamps 13A disclosed here have a circular shape in cross section in the sectional view of Fig. 1, since Fig. 1 does not, however, show the entire shape of the lamps 13A. On the other hand, referring to Fig. 2, the lamps 13A are depicted in a manner which most likely would suggest that they are point light sources. That is, the layout in which bar-like flash lamps are arranged cannot be derived from Imahashi.

Regardless, even if the lamps 13A described in Imahashi would have been explicitly described to be bar-like lamps, Imahashi does not describe or suggest that the length of such bar-like lamps is greater than a process tube 11 (which corresponds to the chamber of the present invention). Therefore, a system layout in which “the lamp house is disposed such that loading and unloading directions of a substrate by the transport robot is perpendicular to the longitudinal direction of the plurality of flash lamps” and the feature about the length of the outside dimension of the chamber relative to the length of the flashlamps cannot be derived from Imahashi.

Turning to Sheets, this reference discloses xenon flash tubes. The secondary Shinriki reference discloses a cassette accommodation chambers 608A and 608B (corresponding to the indexer of the present invention) and a mounting table 58 (corresponding to the heating plate of the present invention). However, neither of these last mentioned references discloses or suggests that “the lamp house is disposed such that the loading and unloading directions of a substrate by the transport robot is perpendicular to the longitudinal direction of the plurality of flash lamps (or

the longitudinal direction of the lamp house) is longer than the outside dimension of the chamber”.

Based on the foregoing remarks, any apparatus constructed on the basis of the prior art would not achieve the benefits of the present invention, nor would it have its structure. Accordingly, it is respectfully submitted that the invention in independent claims 1 and 8 clearly define over Imahashi, Sheets and Shinriki, whether those references are taken singly or in any combination and, as such, neither of these independent claims can be asserted to be obvious over the prior art. The remaining claims include the limitations of their base claims and impose further limitations thereon which distances them even further from the prior art.

Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims as amended and pass this case to issue.

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Respectfully submitted,

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